

1/2 020  
TITLE--EQUILIBRIUM OF CONDENSED PHASES WITH VAPOR IN WHICH ASSOCIATION AND  
AGGREGATION PROCESSES TAKE PLACE. V. CHANGE IN THE ACTUAL COMPOSITION OF  
AUTHOR--MARKUZIN, N.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 350-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PHASE EQUILIBRIUM, DIFFERENTIAL EQUATION, GAS STATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
STEP NO--UR/0076/T0/D44/002/0350/0355  
M

2/2 020  
CIRC ACCESSION NO--AP0116743  
ABSTRACT/EXTRACT--(U) GP-0- UNCLASSIFIED  
DERIVED FOR DESCRIBING THE TRUE COMPN. OF THE VAPOR PHASE AT ISOBARIC  
TEMP. CHANGES IN A CONDENSED PHASE VAPOR BINARY SYSTEM.  
FACILITY: KHIM. FAK., LENINGRAD. GOS. UNIV., LENINGRAD, USSR.  
PROCESSING DATE--1960

UNCLASSIFIED

UDC: 629.7.036.3.011.4(088.8)

USSR

MARKVIT, YU. M. and KULIKOVSKIY, P. V.

"Test Bed for Testing an Aviation Power Unit"

USSR Author's Certificate No 334500, filed 28 Aug 70, published 6 Oct 72 (from RZh-34 Aviatsionnyye i Raketnyye Dvigateli, No 4, Apr 73, Abstract No 4.34.91 P)

Translation: A test bed is patented for testing an aviation power unit. The test bed contains an aerodynamic nozzle with an exit cone and the tested engine with a cooling channel. All of these are set in a pressure chamber. In order to reduce the power consumed during starting, the cooling channel is connected by means of a pipeline to an autonomous exhaust system. In the latter during starting and for disconnecting the exhaust device during an operating regime. This test bed differs from others in that the baffle is made in the form of a partition while the cavity of the channel beyond is joined to the atmosphere in order to gain air for cooling during a working regime. Original article: 3 illus. Resume.

1/1

UDC: 620.001.42

USSR

MARKVIT, Yu. M., KULIKOVSKIY, P. V.

"A Stand for Testing an Aircraft Power Plant"

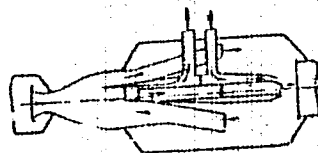
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,  
No 12, Apr 72, Author's Certificate No 334500, Division G, filed 28 Aug 70,  
published 30 Mar 72, pp 164-165

Translation: This Author's Certificate introduces: 1. A stand for testing aircraft power plants. The installation contains an aerodynamic nozzle with exit cone and the test motor with cooling channel all installed in a pressure chamber. As a distinguishing feature of the patent, the start-up power demand is reduced by using tubing to connect the cooling channel to a self-contained suction system, and by installing a two-position baffle behind the tubing in the channel to cover it during starting and to cut off the suction system under operating conditions. 2. A modification of this stand distinguished by the fact that the baffle is made in the form of a diaphragm, and the cavity of the channel behind it communicated with the atmosphere so that cooling air can be drawn into it under working conditions.

1/2

USSR

MARKVIT, Yu. M., KULIKOVSKIY, P. V., USSR Author's Certificate No 334500



2/2

- 131 -

USSR

UDC: 621.317.77

GORSHKOV, A. I., VOYNO, L. V., GLEZER, Ya. V., MARIATOV, V. D.

"A Controllable Phase Shifter"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 12, Apr 71, Author's Certificate No 299947, Division H, filed 12 Jun 69,  
published 26 Mar 71, p 207

Translation: This Author's Certificate introduces a controllable phase shifter with integrating link. As a distinguishing feature of the patent, the phase shift is made independent of the change in frequency of the signal being regulated by connecting a phase switch at the output of the phase shifter, and connecting two limiters to the output of the integrating link through an amplifier with automatic gain control. These limiters are also connected to voltage sources of equal value and opposite sign. Connected to the outputs of the limiters through differentiating circuits and diodes are the opening and closing inputs of a flip-flop and an integrating link and limiter connected in series with the flip-flop.

1/1

1/2 009 UNCLASSIFIED PROCESSING DATE--J000110  
TITLE--USING NIOBIUM CARBIDE AS HEATERS FOR ELECTRIC RESISTANCE FURNACES  
-U-  
AUTHOR--(05)--SAMSONOV, G.V., KINDYSHEVA, V.S., KISLYY, P.S., MALTSEVA,  
L.F., MARMER, E.N.  
COUNTRY OF INFO--USSR  
SOURCE--KIEV, TEKHNLOGIYA I ORGANIZATSIYA PROIZVOOSTVA, NO 1, 1970, PP  
85-86  
DATE PUBLISHED--70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS  
TOPIC TAGS--NIOBIUM CARBIDE, BIBLIOGRAPHY, ELECTRIC RESISTANCE, ELECTRIC  
FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1340

STEP NO--UR/0418/70/000/001/0085/0086

CIRC ACCESSION NO--AP0123298

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--300CT70

2/2 009

CIRC ACCESSION NO--AP0123296

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. CONDITIONS ARE DESCRIBED FOR PRODUCING HEATERS MADE FROM NIOBIUM CARBIDE DESIGNATED FOR OPERATION IN HIGH TEMPERATURE ELECTRIC RESISTANCE FURNACES, IN A PROTECTIVE ATMOSPHERE OR IN A VACUUM. PARTICULARS OF THE HEATERS PRODUCED ARE DESCRIBED. THE HEATERS ARE OF HIGHER DENSITY. IT IS SHOWN THAT NIOBIUM CARBIDE HEATERS CAN OPERATE CONTINUOUSLY WITHOUT SIGNIFICANT CHANGES IN THEIR CHEMICAL COMPOSITION OR STRUCTURE AT 2500-2600DEGREESC AND IN A 1 TIMES 10 PRIME NEGATIVE3 MINUS 1 TIMES 10 PRIME NEGATIVE4 MM HG FOR 300 HOURS.

UNCLASSIFIED



USSR

UDC 620.17:669.14.018.44:621.78.061

KLYKOVA, R. S., MUROVANNAYA, S. G., and MARMER, E. N., All-Union Scientific Research Institute of Electric Heating Equipment

"Properties of Heat-Resistant Steels After Vacuum Heat Treatment"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73, pp 62-65

Abstract: The effect of vacuum heat treatment on 2Kh13, 1Kh11MF and EI893 heat-resisting alloys was investigated with the alloys heated at different temperatures for different time intervals and at pressures of  $10^{-2}$  and  $10^{-3}$  mm Hg. After heat treatment the samples were checked for change of purity class, presence of an oxide film, microstructure, and depth of defective layer. Mechanical properties were also determined. Some samples were heat-treated in argon and nitrogen. It was found that vacuum heating at the mentioned pressures does not change the microrelief of the surface and provides the required surface finish (class 7). Heating and cooling at a high temperature provides a bright surface. After heating and hardening, the depth of the surface layer depleted by alloying elements is less than or equal to 50-60 microns. Heating at a pressure of  $10^{-3}$  mm Hg in modes of tempering and aging does not cause additional change in the surface condition and the formation of a depleted layer. The study of mechanical

1/2

USSR

KLYKOVA, R. S., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,  
No 1, Jan 73, pp 62-65

properties of vacuum heat-treated samples showed that vacuum treatment,  
ensuring degassing of the alloys, does not lower strength and increases  
their ductility. 4 figures, 3 tables, 2 bibliographic references.

2/2

- 19 -

USSR

UDC 620.17:669-1-13:669.15<sup>74</sup>-194

CHERNYAK, S. S., IVAKIN, V. L., and MARMONTOV, Ye. A., Irkutsk Heavy  
Machine Building Plant

"Properties of 110G13L Steel After Hot Deformation"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 9, 1970, pp  
59-60

Abstract: A study was made of the influence of hot deformation on the mechanical properties of type 110G13L low-phosphorus steel, with the following composition: 1.2% C, 10.5% Mn, 0.37% Si, 0.01% S, 0.012% P, produced in a 3 ton basic electric furnace. Specimens were heated from 900 to 1250°C at intervals of 50°C, held for 20-30 minutes, clamped in a press at 0.06 m/min to from 5 to 50% deformation, with subsequent cooling in water. Thirty percent deformation at 1200°C was found to increase strength by 43%, and the yield point by 30% in comparison with the same steel after standard hardening. The plastic properties changed little. The wear of 110G13L steel containing 0.02% P after 30% hot deformation is one-third the wear of type G13L steel containing 0.07% P after standard hardening.

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USSR

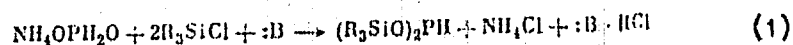
UDC 547.245

VORONKOV, M. G., MARMIR, I. A., DOLGOV, O. N., PESTUNOVICH, V. A.,  
POKROVSKIY, Ye. I., and POPEL, Yu. I., Leningrad Institute of Textile and  
Light Industry imeni S. M. Kirov; Institute of Organic Synthesis, Academy  
of Sciences Latvian SSR

"Bis(trialkylsilyl) Hypophosphites"

Leningrad, Zhurnal Obshchey Khimii, Sep 70, Vol 41, No 9, pp 1987-1991

Abstract: This is the first report on the synthesis of organosilicon --  
bis(trialkylsilyl) hypophosphites  $(R_3SiO_2)PH$ . One method is based on the  
reaction of ammonium hypophosphite with trialkylchlorosilanes in the  
presence of secondary and tertiary amines:



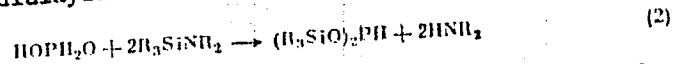
R = alkyl, : B = amine

1/2

USSR

VORONKOV, M. G., et al., Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9,  
pp 1987-1991

The hypophosphite yield reaches 35-45%. The second method produces a much higher yield (80-90%) and is based on the reaction of hypophosphorus acid with trialkyl(dialkylamino)silanes:



Some of the properties of these compounds are discussed. The compounds readily disproportionate in the presence of alkyl halides, transsilylate are oxidized by oxygen, and add to double bonds. The IR and NMR spectra of bis(trialkylsilyl) hypophosphites are presented in a table.

2/2

- 43 -

USSR

UDC: 547.245

D'YAKOV, V. M., ~~MARMIR, I. Z.~~, VORONKOV, M. G., ORLOV, N. F., Leningrad  
Institute of Light Industry and the Textile Industry imeni S. M. Kirov;  
Irkutsk Institute of Organic Chemistry, Siberian Department of the Academy  
of Sciences of the USSR; Leningrad Technological Institute imeni Lensovet

"Alcoholysis and Silanolysis of Trialkyl Silyl Derivatives of Phosphorous  
and Hypophosphorous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1291-1295

Abstract: The authors investigated the alcoholysis and silanolysis of tris  
(trialkylsilyl) phosphites, bis(trialkylsilyl) phosphites, bis(trialkylsilyl)  
hypophosphites and trialkylsilyl hypophosphites. Alcoholysis of trialkylsilyl  
derivatives of phosphorus acids takes place with the formation of trialkyl-  
alkoxysilane and the corresponding acids or their partial trialkylsilyl  
derivatives. A silyl exchange reaction takes place when lower trialkylsilyl  
derivatives of a phosphorous acid are reacted with a higher trialkylsilanol.  
At the same time, under certain conditions, partial derivatives of phosphorous  
acid and hexaalkyldisiloxane are formed. Trialkyl phosphites and dialkyl phos-  
phites did not react under the experimental conditions. Hydrolysis of trial-  
kylsilyl derivatives of hypophosphorous acid yielded hypophosphorous acid and  
hexaalkyldisiloxane.

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tion are: bis-(trimethylsilyl)-hypophosphite, b.p. 22/10 mm,  $n_D^{20}$  1.4116,  $d_4^{20}$  0.8969; and bis-(triethylsilyl)-hypophosphite, b.p. 96-97°/1 mm  $n_D^{20}$  1.4517,  $d_4^{20}$  0.9223. The compounds are colorless liquids, self-igniting in air and very reactive towards oxygen, sulfur, compounds with labile hydrogen, various halides, unsaturated compounds, etc. IR spectra show a strongly shifted P-H band at  $2165\text{cm}^{-1}$ .

1/1

USSR

UDC 547.245

VORONKOV, M. G., MARMUR, L. Z., Leningrad Institute of Textile  
and Light Industry imeni S. M. Kirov, Leningrad, Ministry of Higher  
and Secondary Specialized Education RSFSR

"Trialkylsilyl Ethers of Hypophosphorous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,  
pp 2135-2136

Abstract: Reaction of ammonium hypophosphite with trialkylamino-  
silanes gives complete organosilicon ethers



Therapy

USSR

MARMUR, R., Doctor of Medical Sciences, Head of the Ultrasound Laboratory

"Ultrasound in Ophthalmology"

Moscow, Meditsinskaya Gazeta, 5 Feb 71, p 3

Abstract: Experimental and clinical research in the use of ultrasound in ophthalmology has been conducted for about 10 years at the Odessa Scientific Research Institute of Eye Diseases and Tissue Therapy imeni Academician V. P. Filatov. The physiologically safe and effective range of ultrasound energy has been determined. Ultrasound reduces inflammation, accelerates resorption of extravasated blood, inhibits formation of retrocorneal membranes after corneal transplants, stimulates posttraumatic regeneration, and ensures finer scars after healing of corneal and scleral wounds. Proper methods of ultrasound therapy have been developed and popularized. Ultrasound has been fairly successfully used in retinal detachment and partial atrophy of the optic nerve. It promotes accumulation of desirable drugs in the eye tissues. Clinical application of ultrasound proceeds, without full theoretical understanding of its mechanism of action. Further studies should elucidate the effect of ultrasound on metabolic processes, retinal blood circulation, lytic properties of eye tissues, and on other parameters. Ultrasound

1/2

USSR

MARMUR, R., Meditsinskaya Gazeta, 5 Feb 71, p 3

is very helpful in the diagnosis of eye diseases. The method of ultrasound echography is especially useful when the refractive system of the eye has become opaque. Thus, intraocular tumors, fibroblastic degeneration of the vitreous body, presence of foreign bodies, and other disorders can be diagnosed. Ultrasound echography yields valuable information about the size of the various eye chambers. Attempts are currently being made to emulsify lense cataracts with ultrasound. Instruments used in ultrasound therapy are constantly being improved.

2/2

- 61 -

USSR

MUNAYEV, Yu. A., IKSANOV, B. A., MARMYNOV, S. E., FARKULLIN, O. Kh.

**"Wetting of Zirconium Nitride with Nickel-Cobalt Alloys"**

Moscow, Izvestiya Vysshikh Tekhnicheskikh Zavedeniy, Chernaya Metallurgiya, No 9, 1972, pp 13-15.

Abstract: Results are presented from an experimental study of the equilibrium contact wetting angles as a function of composition, dynamics of change of contact angles during wetting and spreading rate of liquid alloys over a solid coating. The specimens of zirconium nitride used in the study were produced by precipitation from the gas phase onto a substrate of MPG-6 graphite. The thickness of the coatings was 0.7-1.0 mm. The total content of impurities in the nitride coating was not over 0.01%. The test data showed that the wetting of zirconium nitride by a nickel-cobalt alloy occurs by the mechanism of formation of adsorption layers by surface diffusion. Enrichment of the alloys with nickel apparently causes formation of thick, thermodynamically stable adsorption layers, while enrichment with cobalt causes formation of unstable adsorption layers, so that the liquid metal collects into drops.

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- 28 -

USSR

UDC 677.4:54-171.539.16.04

SLATINA, S. D., KIRILENKO, YU. K., VOL'F, L. A., MECS, A. I., SHAPIRO, YE. I.,  
VISHNYAKOVA, T. P., PANCHENKOV, G. M., VLASOVA, I. D., KAUCHEVSKIY, D. A.,  
and MARHAUSOV, V. A.

"Radiation Resistant Polyvinylalcohol Fibers Containing Ferrocene"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 786-787

Abstract: Polyvinylalcohol fibers containing ferrocene were obtained by impregnating a freshly formed or thermostabilized PVA-fibers with 5-18% solution of 1,1'-diacetylferrocenylformaldehyde resin / 1,1'-DAFF / in acetone. After the impregnation the material was heated to 140-160°C for 10-20 min, resulting in formation of chemical bonds between the hydroxyl groups of the PVA-fiber and the methylal group of 1,1'-DAFF resin (14-18% of chemically bound 1,1'-DAFF resin). The 1,1'-DAFF resin was obtained by polycondensation of diacetylferrocene with formaldehyde in ethanol at 50°C and in presence of sodium carbonate. The modified fiber was subjected to  $\gamma$ -radiation in presence of air oxygen. The strength and the elastic indicators of the ferrocene containing material were superior in comparison to the starting material.

1/1

- 75 -

USSR

UDC 534.26

MARNEVSKAYA, L. A., Mathematics Institute, Minsk

"On the Diffraction of a Sound Wave on a Sphere With Nonconcentric Spherical Inclusion"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 4, Oct-Dec 72, pp 571-578

Abstract: The method of separation of variables is applied for the solution of the problem of diffraction of a spherical or plane sound wave on a sphere (1) with nonconcentric spherical inclusion (2). The inner sphere (2) is assumed either absolutely soft or absolutely rigid. The source of the spherical sound wave can be located both, outside of the large sphere (zone 1), or also between the two spheres (zone 2). The solution is found by determining the velocity potentials  $u^{(1)}$  and  $u^{(2)}$  of secondary acoustic fields developing in zones 1 and 2 as a result of excitation of the spheres by the source field. Directivity diagrams are presented for secondary and total fields in the wave zone depending on the change of the spherical angle  $\theta$ , for different position of the source relative to the line connecting the centers of the spheres, and for different distance of this line from the origin of coordinates. Three illustr., twenty formulas, four biblio. refs.

1/1

USSR

UDC 615.217.4.015

KUZ'MITSKIY, B. B., AKHREM, A. A., UKHOVA, L. I., MAROCHKIN, A. P., and  
BLUDOVA, G. V., Minsk Medical Institute and Institute of Physical and Organic  
Chemistry, Academy of Sciences, Belorussian SSR

"Pharmacological Properties of Stereoisomeric 4-Vinylethynyl- and 4-Butyl-  
Substituted Decahydro-4-quinololes"

Moscow, Farmakologiya i Toksikologiya, No 6, 1972, pp 665-668

Abstract: The spectrum of neurotropic activity of several new decahydroquinoline derivatives (2-methyl- and 1,2-dimethyl-4-vinylethynyldecahydroquinololes-4 and 2-methyl- and 1,2--dimethyl-4-butyldecahydroquinololes-4) was studied in experiments on mice, rats, and cats. The compounds were found to have ganglion-blocking and antinicotinic activity. They inhibited the transmission of excitation mainly in the parasympathetic ganglia of the heart, had little effect on the superior cervical ganglion, and did not significantly alter the sensitivity of the M-cholinoreceptors or noncholinergic neurons. The ganglion-blocking and antinicotinic activity of the compounds varies with their chemical and spatial structure. Large doses intensify the central action of amphetamine sulfate, prolonging stereotypic movements in the rat. The 2a isomer, a tertiary amino alcohol, is the most active. There is no correlation between M-choline-blocking activity and toxicity when the configuration of the compounds is changed.

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USSR

UDC: 621.396.6.019.3:621.391.8:621.318.82

MAROCHKIN, V. G.

"Sliding Noise in Variable Wire Resistors"

Electron. tekhnika. Nauchno-tekhn. sb. Radiokomponenty (Electronic Engineering, Scientific-Technical Collection, Electronic Components) 1970, No. 3, pp 18-25 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3V366)

Translation: The possibility of using sliding noise for quality control of the contact in variable resistors is discussed. In this connection, the causes of the sliding noise are examined and the results of experimental investigation given. Methods of reducing the noise are analyzed. Eight illustrations, bibliography of one. N. S.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--040EC70  
TITLE--ON THE ROLE OF THE MAGNETIC FIELD IN A WAVE THEORY OF THE SPIRAL  
STRUCTURE OF GALAXIES -U-  
AUTHOR-(02)-MAROCHNIK, L.S., PTITSINA, N.G.  
COUNTRY OF INFO--USSR  
SOURCE--ASTROPHYS. SPACE. SCI. (NETHERLANDS), VOL. 7, NO. 3, P. 437-45  
(JUNE 1970)  
DATE PUBLISHED----JUN70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--SPIRAL GALAXY, INTERSTELLAR MATTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605030/D01 STEP NO--NE/0000/70/001/003/0437/0445

CIRC ACCESSION NO--AP0141823

UNCLASSIFIED



UNCLASSIFIED

PROCESSING DATE--04DEC70

2/2 012

CIRC ACCESSION NO--AP0141323

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPIRAL WAVES IN A MODEL GALAXY CONSISTING OF THE DIFFERENTIALLY ROTATING INTERSTELLAR GAS AND POPULATION I ARE CONSIDERED. THE INSTABILITY OF SPIRAL WAVES IN THE PRESENCE OF DIFFERENTIAL ROTATION AND MAGNETIC FIELD IS FOUND. THIS INSTABILITY MAY LEAD AS WELL AS THE LANDAU INSTABILITY FOUND BY MAROCHNIK AND SUCHKOV (1968, 1969) TO THE FORMATION OF AN OBSERVABLE SPIRAL PATTERN IN A SHORT TIME. IT MAY PLAY A DEFINITIVE ROLE IN THE SPIRAL STRUCTURE FORMATION IN GALAXIES WITH WEAK POPULATION II. (30 REFS).

FACILITY: ACAD. SCI. TADJIK S.S.R., DUSHANBE, USSR.

UNCLASSIFIED

USSR

UDC 535.375:621.382

GUDZ, E.S., MARONCHUK, I.YE., SHERSTYAKOV, A.P., YAKUSHOVA, N.A.

"Electroluminescent Screen Of Matrix Type, Emissive In Visible Region Of Spectrum (Short Report)"

Elektron. tekhnika. Nauch.-tekhn. sb. Poluprovodn. pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1972, Issue 4(68), pp 120-122 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No 11B352)

Translation: The report concerns the creation of a flat electroluminescent screen of the matrix type based on solid solutions of  $GaAs_{1-x}P_x$  and  $Ga_{1-x}Al_xAs$  [sic]. The technology of the production of screens based on epitaxial building-up is considered. Summary.

1/1

- 115 -

MARONCHUK, I. YE

59208  
C-73

4

III-6. EFFECT OF THE SUBSTRATE ORIENTATION ON THE GROWTH AND PROPERTIES OF  
EPITAXIAL LAYERS

[illegible]

The external layers of solid solutions of  $\text{KNO}_3$  and  $\text{NaNO}_3$  were etched from a solution in a hydrogen flask on gallium arsenide plates with an orientation of 100, 110, 111 and on the 100 planes disoriented to 111 by  $3^\circ$  and  $10^\circ$ .

The effect of the orientation plane on the growth rate, morphology, electrical parameters and photoluminescence intensity was investigated. The crystals were improved with respect to morphology were obtained on single-layer plates. The distribution of the composition in the  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  layers with respect to thickness is observed as a function of the substrate orientation plane. The most uniform layers were obtained for growth on substrates oriented in the 111B plane. In pure layers of  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  with a concentration of less than  $5 \cdot 10^{15} \text{ cm}^{-3}$ , a deep level is observed (for example, for  $x = 0.3$ ) the activation energy of the level  $E = 0.12$  electron volts). On the basis of the layers of solid solutions of  $\text{Al}_x - \text{Ga}_{1-x}\text{As}$ ,  $\text{GaP}$ ,  $\text{In}_x\text{As}_{1-x}$  obtained, like diodes were manufactured with a brightness to 1,000 ac for a current of 10 milliamperes.

MARONCHUK, I. YE

5125 19208  
6-73

211-3. STUDY OF THE PROPERTIES AND CONDITIONS OF GROWTH OF EPITAXIAL LAYERS  
OF GALLIUM ARSENIDE FROM SOLUTION IN A GALLIUM MELT  
Article by I. Ye. Maronchuk, G. S. Pechenkin, Yu. G. Pukhov, B. I. Sushko,  
A. N. Tsvetkov, A. N. Tsvetkov, A. N. Tsvetkov, A. N. Tsvetkov, A. N. Tsvetkov, A. N. Tsvetkov,  
Sinteza i poluprovodnikov, Vsesoyuznyy nauchno-issledovatskiy tsentr, Moscow, 12-17 June 1972,  
p. 107.

The epitaxial layers of gallium arsenide were grown from a solution in  
a gallium melt in a vertical reactor. The gallium melt placed in a container  
of carbon glass was saturated by arsenic by decomposition of AsCl<sub>3</sub>. A study  
was made of the effect of the growth temperature, the cooling rate, the melt  
volume and the agitation plans of the substrate on the morphology, the growth  
rate and the electrical characteristics of the epitaxial layers. The properties  
of uncontrolled structures were analyzed for growth of the gallium arsenide lay-  
ers.

MARONCHUK, I. Ye.

5125 492008

6-13

VIL-6. GROWTH OF EPITAXIAL LAYERS OF GALLIUM ARSENIDE FOR THE MANUFACTURE OF GUNN DIODES

[illegible]

The basic experiment on Einstein's theory was carried out by the German physicist A. Einstein in 1905. It was shown that the speed of light in the vacuum is constant and does not depend on the motion of the source and the observer. This result is in complete agreement with the results of the experiment carried out by the American physicist A. Michelson in 1887. The results of the experiment carried out by the American physicist A. Michelson in 1887 are in complete agreement with the results of the experiment carried out by the German physicist A. Einstein in 1905. The results of the experiment carried out by the American physicist A. Michelson in 1887 are in complete agreement with the results of the experiment carried out by the German physicist A. Einstein in 1905.

A study was made of various versions of etching the substrates in the gas phase, and the regime was selected which permits the surface to be etched with a rate of 10-15 nm/min after annealing. A detailed analysis was made of the processes in the source zone, and the activation time of the source was calculated on the basis of the proposed model of the formation of a thin layer of gallium arsenide on the surface. A study was made of the characteristic features of obtaining the nonspatial structures. Epitaxial layers were obtained with a  $10^{-3}$  to  $10^{-5}$  cm and a mobility of  $\mu = 10,000$  cm<sup>2</sup>/vsec at 77°K not containing unexamined impurities greater than 0.5 microns in an area of 3 cm<sup>2</sup>.

Semiconductor Technology

USSR

UDC 546.681.19:539.238

MARONCHUK, YU. YE., SHERSTYAKOV, A. P., and SHERSTYAKOVA, V. N.,  
Institute of Semiconductor Physics, Siberian Division, Academy of  
Sciences USSR, Novosibirsk University

"Impurity Levels in Epitaxial Films of GaAs"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materi-  
aly, No 9, Sep 73, pp 1490-1496

Abstract: Epitaxial films of GaAs are of considerable interest for practical uses. It is necessary to have knowledge of the energy spectrum of the impurities in order to use films of GaAs in electronic instruments. Using different methods of crystallization and alloying GaAs results in different behavior of the impurities and consequently to a different energy spectrum of the electrons. The authors find that the long-wave bands of radiation in the spectra of photoluminescence of unalloyed films of GaAs produced by gas-transport epitaxy are produced by the presence of Ga vacancies and an uncontrollable impurity, apparently, copper. The deep centers of recombination in films doped with elements of the VI and IV groups are caused by the interaction of

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USSR

MARONCHUK, YU. YE., et al., Izvestiya Akademii Nauk SSR, Neorganicheskiye Materialy, No 9, Sep 73, pp 1490-1496

Ga vacancies with the impurity atoms. The absence of long-wave bands of radiation in films produced by liquid epitaxy both of unalloyed and alloyed elements of group IV is due to the small concentration of Ga vacancies in such films. The deep levels in films doped with a Te impurity are caused by the Ga vacancy generation and the formation of complexes such as  $Ga_2V_{Ga}Te_3$ . The article contains 7 figures and 18 bibliographic references.

2/2

- 36 -

USSR

UDC: 621.315.592

MARONCHUK, Yu. Ye., SHERSTYAKOV, A. P., and SHERSTYAKOVA, V. N.,  
Institute of Semiconductor Physics, Novosibirsk

"Photoluminescence Spectra of Epitaxial GaAs Layers"

Leningrad, Fizika i tekhnika poluprovodnikov, No 8, 1972, pp 1622-1623

Abstract: This brief communication is a discussion of gas-transported and liquid methods of epitaxial growth of GaAs layers. In layers grown by the gas-transport method, three bands of photoluminescent radiation with energies of 1.51, 1.28, and 1.02 eV are observed at 77° K and with an electron concentration of about  $10^{16}$ /cc. In layers of greater purity, with electron concentrations of  $10^{14}$ - $10^{15}$ /cc and with a mobility of 8000 cm<sup>2</sup>/V.sec, the radiation bands for gas-transported epitaxial growth are also three in number, with energy levels of 1.51, 1.35, and 1.02 eV. In layers grown by liquid epitaxy, however, the photoluminescence radiation occurs in only one band with an energy of 1.51 eV, for GaAs with an electron concentration of  $10^{14}$ - $10^{16}$ /cc. Data concerning the photoluminescence to be expected with various types

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USSR

MARONCHUK, Yu. Ye., et al, Fizika i tekhnika poluprovodnikov, No 8, 1972, pp 1622-1623

and concentrations of impurities is also given. Three spectra are plotted: two for each of the growth methods, gas and liquid, and one for layer thickness. This last spectrum, however, is subdivided into gas-transport and liquid epitaxial growth types.

2/2

- 110 -

UDC: 519.1

USSR

YEFIMOV, Yu. N., KIZEV, V. I., MAROSHKIN, G. Yu., NEVRAYEV, V. I., SEDEL'-  
NIKOV, P. A.

"Using Graphs in Normative Calculation of the Production Cost of an Item"  
Izv. Tomsk. politekhn. in-ta, 1972, 223, pp 10-11 (from RZh-Kibernetika,  
No 7, Jul 73, abstract No 7V390 by I. Sigal)

Translation: The paper deals with the problem of determining the production cost of a good. The problem consists in calculating indirect expenses, as well as expenses introduced by the elements which comprise the given product. The problem may be represented by an oriented graph, each vertex corresponding to some item  $i$ , while the arcs  $(i, j)$  of the graph correspond to the applicability of this item (good)  $i$  for obtaining product  $j$  into which these products  $i$  are incorporated as a component part. It is assumed that the vertices in this graph are broken up into layers (topologically ordered). To get the complete production cost, the expenses are calculated for each product  $j$  by adding the expenses with respect to the component products for all vertices of the graph from left to right.

1/1

Miscellaneous

UDC 550.4

USSR

VINOGRADOV, A. P., ~~MAROV, M. Ya.~~, and SURKOV, Yu. A., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Acad. Sc. USSR, Moscow

"Investigation of the Venus Atmosphere by the Soviet Automatic Stations  
"Venera-4," "Venera-5," and "Venera-6"

Moscow, Geokhimiya, No 4, April 1972, pp 387-401

Abstract: Scientific apparatus used on the automatic stations "Venera-4, 5 and 6" is described; data received on the chemical composition, temperature and pressure of Venus are reported. Venus atmosphere consists of the following mixture: CO<sub>2</sub> - 97 ± 4%, nitrogen - less than 2%, oxygen - less than 0.1%, water - about 12 mg/l (at the level of condensation). Temperature and pressure determinations are reported graphically; initial pressure of 0.6 atm corresponded to 25°C, final pressure at which measurements were received was 27 atm at 320°C. The atmospheric density increased uniformly with descending height. Using these data the structure of the Venusian atmosphere, its origin and evolution is speculated upon and compared to earth. A conclusion is reached that by the endogenous processes both the earth and Venus have similar history. At the same time, these planets differ by their exogenous processes occurring on the surfaces. This obviously is due to the difference in proximity to the sun which resulted in the formation of the heavy carbon dioxide atmosphere on Venus.

1/1

UDC 629.783.014.525(47)

USSR

BALAYEV, N. F., GRODZOVSKIY, G. L., DANILOV, Yu. I., ZAKHAROV, V. M.,  
KRAVTSEV, N. F., KUZ'MIN, R. N., KAROV, M. Ya., MOROZOV, P. M.,  
NIKITIN, V. Ye., PEROV, S. P., PETUNIN, A. N., UTKIN, V. M., and  
SHVIDKOVSKIY, Ye. G.

"Scientific Data on the Flight of Automatic Ionospheric "Yantar"  
Laboratories"

Uch. zap. Tsentr. Aerogidrodinam. in-ta (Scientific Notes of the  
Central Aerohydrodynamic Institute) 1971, Vol 2, No 2, pp 58-65  
(from Referativnyy Zhurnal, Raketostroyeniye, No 11, Nov 71,  
Abstract 11.41.87 Resume)

Abstract: Launches of automatic ionospheric "Yantar" laboratories  
with gaseous plasma-ionic engines up to 100-400 km altitudes were  
conducted with the aid of geophysical rockets, for the purpose of  
studying prospects of controlled flight, in upper layers of the  
atmosphere. Performance of gaseous plasma-ionic engines under iono-  
spheric conditions was studied. Parameters characterising the  
ion jet-ionospheric plasma interaction, as well as parameters of  
neutral atmosphere were measured. Scientific data on conducted ex-  
periments is presented. 8 figures, 1 table, 11 references.

1/1

1/3 . 034  
UNCLASSIFIED  
PROCESSING DATE--11JEC70  
TITLE--DENSITY VARIATIONS IN THE UPPER ATMOSPHERE AT 200-300 KM HEIGHTS  
-U-  
AUTHOR--(02)-MARKOV, P.YA., ALPHEROV, A.M.  
COUNTRY OF INFO--USSR  
SOURCE--13TH SESSION OF COSPAR, LENINGRAD, MAY, 1970  
DATE PUBLISHED---MAY70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, ASTRONOMY, ASTROPHYSICS  
TOPIC TAGS--DIURNAL VARIATION, UPPER ATMOSPHERE, THERMOSPHERE, ATMOSPHERIC  
MODEL, SOLAR ACTIVITY, ATMOSPHERIC DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605006/E03 STEP NO--UR/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AT0139793

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11DEC70

2/3 - 034

CIRC ACCESSION NO--AT0139793

ABSTRACT/EXTRACT--(U) GP-C-

ABSTRACT. THE MAIN CHARACTERISTICS OF DIURNAL AND SEMI ANNUAL VARIATION IN DENSITY OF THE THERMOSPHERE AT HEIGHTS OF 200-300 KM ARE EXAMINED BASED ON THE ANALYSIS OF SATELLITE ORBIT DURING THE PERIOD OF 1960-1969, DEPENDING ON DIFFERENT PHASES OF THE 11 YEAR SOLAR ACTIVITY CYCLE. 8. CONCLUSION. LET US BRIEFLY SUMMARIZE THE RESULTS PRESENTED. THE COSMOS SATELLITE ORBIT DECAY DATA DURING 1968-1969 IN COMPARISON WITH THE RESULTS EARLIER OBTAINED FOR 1960-1969 ALLOWED TO TRACE THE BEHAVIOR OF MOST PROMINENT DENSITY VARIATIONS IN DIFFERENT PHASES OF SOLAR ACTIVITY. THE EXTREME DIURNAL VARIATIONS IN DENSITY OF THE EARTH'S THERMOSPHERE DURING 11 YEAR CYCLE HAD BEEN EXAMINED BY BOTH MAGNITUDE AND PHASE COMPARED WITH THE CIRA 1965 MODELS. IT WAS FOUND THE AGREEMENT BETWEEN THE DATA OBTAINED AND THE MODEL PROFILES AT HEIGHTS OF 200-300 KM WHICH EXTENDS WITHIN A FACTOR OF 1.1-1.2 BY MAGNITUDE IS EVIDENTLY ON THE WHOLE RATHER SATISFACTORY. IN THE PERIODS STUDIED THE AMPLITUDE OF SEMI ANNUAL VARIATIONS WAS COMPARABLE OR EVEN EXCEEDED THE MAGNITUDE OF DIURNAL VARIATIONS AT ABOUT 270 KM HEIGHT. THE CHARACTER OF EVOLUTION OF A SEMI ANNUAL VARIATION IN DENSITY IS SHOWN TO BE ASSOCIATED AMBIGUOUSLY WITH THE SOLAR DECIMETRIC RADIO FLUX AS INDEX OF SOLAR ACTIVITY. THE ELIMINATION OF THIS AMBIGUITY REQUIRE AN ADDITIONAL INDEX HAVE TO BE APPLIED RESPONSIBLE FOR THE HELIOLATITUDINAL DISTRIBUTION OF CENTERS OF ACTIVITY.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--11DEC70

3/3 C34

CIRC \*ACCESSION NO--AT0139793

ABSTRACT/EXTRACT--SUCH APPROACH APPARENTLY GIVES RISE TO MORE APPROPRIATE  
ADJUSTING OF EXPERIMENTAL DATA ON VARIATIONS IN THE THERMOSPHERE TO  
PHASE OF SOLAR ACTIVITY IN 11 YEAR CYCLE AND SEEMS TO REFLECT BETTER THE  
ACTUAL NATURE OF SUN EARTH RELATIONS.

UNCLASSIFIED

MAROVA, S.N.

OPTICAL-  
Signals

59 JPRS 60473  
01 JPRS 60473

DIRECTION OF NEAR SIGNALS IN THE OPTICAL RANGE

S. N. Marova, Candidate of Technical Sciences

March 1967

The development of optical range and detection and communication systems and the development of radio reconnaissance systems using laser light and optical effects for the purpose of detection and direction of signals of optical frequencies.

In contrast to the radio-frequency range, the efficiency of optical signal detection systems is limited not only by the noise accompanying the signals but also the quantum nature of the signals. In addition, as the quantum effects increase an additional stochastic element enters the detection process. Classical detection theory [1] can not be fully utilized to solve the most problems in the optical wave band.

The basic principles of optical signal detection theory consist in the quantum-mechanical properties of the signals and the noise. In reference [2, 3] where, in particular, the concept of the detection operator is introduced, the basic properties of this operator and the method of finding the form of the optimal detection operator can be solved. The method of finding the form of the optimal detection operator can be solved only in cases where the density operators  $\rho_1$  and  $\rho_2$  describing the signal and noise fields and the noise field only respectively are known. In the special case of detection of sinusoidal fields, the solution regarding the probability of detection of a signal can be found on receiving the number  $n$  of photons in the noise, and the detection characteristics can be calculated according to the corresponding equations presented in reference [1].

In this article a study was made of the case of detection of sinusoidal stationary fields receiving the sum of either the coherent signal with an unknown phase or incoherent signal and Gaussian noise.

No restrictions are imposed in advance on the receiver. We only select that it is on at the time of arrival of the echo.



USSR

MARZOV, Y. A.

"Problem of Continuous Planning"

Vopr. Ekon.-mat. Modelir. [Problems of Economic and Mathematical Modeling -- Collection of Works], Moscow University Press, Moscow, 1971, pp 117-130, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V623).

NO ABSTRACT.

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- 32 -

Acc. Nr.

AP0034218

Abstracting Service:  
CHEMICAL ABST. #70

Ref. Code

WR0078

M

74268b Reaction of uranium compounds with Rongalite.  
Grinberg, A. A. Marshak, E. M. (USSR). Zh. Neorg. Khim.  
1970, 15(1), 152-4 (Russ).  $UO_2^{2+}$  oxidizes rongalite (I) (contg.  
93.4%  $NaHSO_3 \cdot CH_3O \cdot 2H_2O$ ) to  $HSO_3^-$ . Excess of I reacts with  
micro quantities of reduced  $UCl_4$  to give sulfate. U(IV) was  
dtd. in the presence of  $H_2SO_4$  by titrn. with  $MnO_4^-$  in  $AcOH$   
contg. some  $HCHO$ . HMJR

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REEL/FRAME  
19710871

1/2 009 UNCLASSIFIED  
TITLE--SPONTANEOUS MUTATION RATE IN DIPLOID AND ANEUPLOID HUMAN CELLS  
RESISTANT TO 8 AZAGUANINE IN VITRO -U-  
AUTHOR--(02)--MARSHAK, M.I., VARSHAVER, N.B.

PROCESSING DATE--30OCT70

COUNTRY OF INFO--USSR

SOURCE--GENETIKA 1970, 6(2), 130-8

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HUMAN GENETICS, BIOLOGIC MUTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAKE--2000/1372

STEP NO--UR/0473/70/006/002/0130/0133

CIRC ACCESSION NO--AP0125020

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30UCT70

2/2 009

CIRC ACCESSION NO--AP0125020

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATE OF SPONTANEOUS GENE MUTATIONS WAS STUDIED IN NORMAL DIPLOID AND MALIGNANT ANEUPLOID CELLS OF COMMON ORIGIN OBTAINED FROM HUMAN EMBRYOS; 8 AZAGUANINE WAS USED AS A GENETIC MARKER. THE RESISTANT CELLS RETAINED THE DIPLOID KARYOTYPE, AND THE RESISTANCE WAS HEREDITARY. NO CONC. EFFECT WAS OBSERVED WHEN THE RESISTANT CELLS WERE ISOLATED FROM THE PARENTAL ANEUPLOID LINE. ISOLATION OF RESISTANT MUTANTS FROM THE DIPLOID STRAIN WAS POSSIBLE ONLY WHEN THE SIZE OF THE INOCULUM WAS SIMILAR TO 75,000-DISH: AT LOWER CELL NO., THE PLATING EFFICIENCY OF THE MUTANTS DECREASED CONSIDERABLY; AT CELL NO. GREATER THAN 10 PRIMES, DUE TO CONTACT INHIBITION, ONLY A PART OF THE CELLS DEGENERATED. NO DIFFERENCES IN THE MUTATION RATES WERE FOUND BETWEEN THE DIPLOID AND ANEUPLOID CELLS, THE RATE BEING 7 TIMES 10 NEGATIVE PRIMES MUTATIONS PER CELL IN 1 CELL GENERATION.  
FACILITY: I. V. KURCHATOV INST. AT. ENERGY, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 624.191.005.3

M  
MARSHAK, S. A., Candidate of Technical Sciences

"Construction of Tunnels for Mains and Sewers by Mechanized Shields"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 3, March 1979, pp 14-17

Abstract: This article contains descriptions of the designs of new mechanized shields PShch-2,1B, KShch-3,2B, and PShchM-3,6. The basic results achieved with constructing the tunnels for mains and sewers in Moscow and Kiev using these shields are presented. It is pointed out that the majority of tunnels are still constructed by nonmechanized shields making it impossible to achieve high rates of construction and lower the costs. The experience in operating the new mechanized shield complexes 2.1, 3.2 and 3.6 meters in diameter successfully used in building prefabricated reinforced concrete tunnels for mains and sewers in Moscow and Kiev is of great interest. The tunnel building speed is 420, 350 and 600 meters/month for tunnels 2, 3 and 6 meters in diameter, respectively. These figures are for solid ground such as clay, loam, and sandy loam with a compressive strength of up to 150 kg/cm<sup>2</sup>, 250-300 kg/cm<sup>2</sup> and 250 kg/cm<sup>2</sup>, respectively. In connection with mechanization of the basic operations of the boring cycle and increasing the boring rates the productivity of labor of the tunnel construction workers has increased

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USSR

MARSHAK, S. A., Gidrotekhnicheskoye Stroitel'stvo, No 3, March 1970, pp 14-17

by 50-60 percent, and the cost has been reduced by 15-20 percent. In Kiev two of the PShchM-3,6 shields with electric and hydraulic drives did a main tunnel 9 km long through dry clay. In 1966 a maximum speed of 458 running meters per month and 19 running meters per day was achieved, and in 1967 with an electric drive the highest speed was 516 running meters per month and 26 running meters per day. A total of about 4 km of tunnel was built in 15 months.

2/2

UDC: 51

USSR

MAKAROV, V. L., MARSHAK, V. D., FEFELOV, V. F.

"An Algorithm for Formulating Optimum Dynamic Expenditure/Output Models"

V sb. Algoritmy i programmy realizatsii narodnokhoz. modely (Algorithms and Programs for Realization of National Economic Models--collection of works), Novosibirsk, 1971, pp 116-133 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V437)

[No abstract]

1/1

UDC 51.621.391

USSR

MARSHAK, V. D.

"An Algorithm for Solving the Problem of Distributing Resources to Branches"

Sb. tr. In-t mat Sib. otd. AN SSSR (Collected Proceedings of the Institute of Mathematics, Siberian Branch of the USSR Academy of Sciences), No 10(27), 1973, pp 128 - 143 (from RZh Matematika, No 11, Nov 73, abstract No 11 V696)

Translation: The algorithm reported solves the problem of distributing resources among branches to meet the branch goal of maximum production over an assigned range of products. The general branch problem is broken down into a number of special sub-branch problems. The distribution of common resources among particular subassignments is done by the managing organization (ministry). From the mathematical viewpoint the algorithm is an iterative method of solving a block diagonal problem of large dimensionality. The absence of general coordinating tasks makes it possible to handle branch tasks with a block diagonal matrix structure of any dimensionality on a medium size computer, given that each of the particular tasks can be handled with the aid of a standard linear program. From the economic viewpoint the algorithm models the process of sub-branch (enterprise) management.

Abstract by the author.

1/1



USSR

MARSHAK, V. D.

"Study of Processes of Coordination of Plans in a Two-Level Linear Dynamic Optimal Control System"

Optimiz. Planov Razv. i Razmeshch. Otrasley Prom-sti [Optimization of Plans for Development and Placement of Branches of Industry -- Collection of Works], Novosibirsk, 1971, pp 3-21, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V615).

NO ABSTRACT.

1/1

USSR

GRINEBERG, A. A., (Deceased), MARSHAK, YE. M.

"Reaction of Uranium Compounds with Rongalite"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 152-154

Abstract: Rongalite (formaldehyde sodium sulfoxylate) has been proposed as an agent suitable for converting uranyl salts to quadrivalent uranium. A study was made of the changes Rongalite undergoes in this process. A method based on permanganometric titration of uranium in acetic acid containing formalin solution was developed and used by the authors to determine uranium (IV) in end solutions in the presence of  $H_2SO_3$ . It was established that in the reaction of hexavalent uranium with Rongalite, the latter is oxidized to the sulfite. Excess Rongalite in reaction with trace amounts of already reduced uranium undergoes partial oxidation to sulfate. A method is proposed for determining U(IV) and sulfurous acid when present together.

1/1

USSR

STRELCHUK, N. A., KHESIN, G. L., KOSTIN, I. KH., ~~SHPYAKIN, V. N.~~,  
MARSHAK, YU. I.

"Studies of Stresses in Tunnels by the Polarization Optical  
Method and Under Natural Conditions Under the Effect of an  
Explosive Load"

Sb. tr. Mosk. inzh. stroit. in-t (Collected Works of the Moscow  
Construction Engineering Institute), 1970, No 73, pp 53-63 (from  
RZh-Mekhanika, No 11, Nov 70, Abstract No 11V834)

Translation: The stressed state of the hydrotechnical tunnels  
of the Toktogul GES / Hydroelectric Power Plant 7 and the Alma-  
Ata siltproof dam occurring when exploding charges during their  
construction was investigated in two-dimensional models. The  
scales of geometric similarity were  $(2.5-6) \cdot 10^3$ . The complex  
shape of the day surface led to multiple application of the inci-  
dent and reflected waves. The stresses in the outline of the  
tunnels were determined by pictures of the interference bands  
from the condition of similarity of the wave field in nature and  
in the model using known theoretical and empirical relations.

1/2

USSR

STREICHUK, N. A., et al, Sb. tr. Mosk. inzh. stroit. in-t, 1970,  
No 73, pp 53-63

The problem was solved under the assumption of elasticity anisotropy of the material in nature (limestone) and the model (ED5-MTGFA). For the characteristic times corresponding to the effect of different waves in the tunnel, stress-strain diagrams of the expected maximum outline stresses are presented. A comparison of the results obtained using the model and natural measurements is presented for the Alma-Ata Dam. The bibliography has 9 entries.

2/2

- 24 -

USSR

MARSHAK, YU. I., ASTAKHOV, B. S.

"Electric Discharge Unit for Simulating Long Plane Waves by the Method of Dynamic Photoelasticity"

Sb. tr. Mosk. inzh.-stroit. in-t (Collected Works of the Moscow Construction Engineering Institute), 1970, No 73, pp 45-52 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11V923)

Translation: This article contains a description of the procedure for obtaining long plane waves for investigating the seismic effect in hydroengineering structures by the method of photoelasticity. Considering the dimensions of the models, the wavelength should be 100-200 mm. In order to create long plane waves the discharge energy of powerful capacitors was used. The description and sketch of the block diagram of the device for generating and recording plane waves are presented. The conclusion is drawn that satisfactory results are given by the method of explosive foil with direct contact with the model and loading of the model under a pulsed magnetic field with cutoff

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USSR

MARSHAK, YU. I., et al, Sb. tr. Mosk. inzh.-stroit. in-t., 1970,  
No 73, pp 45-52

of subsequent electrical oscillations. The experiments were performed with copper, iron and nickel foil. With identical parameters of the discharge circuit, the iron and nickel created a longer pressure pulse with a flat top on explosion. On exploding iron foil the magnitude of the pressure in the models at a distance of 100-300 mm from the explosive foil was 160-240 kg/cm<sup>2</sup>, and the duration of the compression phase was within the limits of 70-300 microseconds. With a length of the explosive foil of 150 mm, the length of the plane front in the model was 120-130 mm. The procedure was used to study the stresses caused by the seismic effect in a model of a massive concrete dam. The bibliography has 14 entries.

2/2

- 25 -

UDC 669.292.5'24'71.013.13  
USSR

MYASNIKOVA, K. P., PONOMAREVA, L. F., PRYAKHINA, L. I., and  
MARSHAKOV, I. K., Moscow, Voronezh

"Study of the  $\text{NiAl}_3$ - $\text{VAl}_3$  and  $\text{Ni}_2\text{Al}_3$ - $\text{V}_5\text{Al}_8$ "

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 1, Jan 71,  
pp 186-189

Abstract: Microstructural, x-ray structural and thermal analysis were made to study the phase equilibria in  $\text{NiAl}_3$ - $\text{VAl}_3$  and  $\text{Ni}_2\text{Al}_3$ - $\text{V}_5\text{Al}_8$ . It is demonstrated that in the solid state, the alloys of both sections have a two-phase structure, the phase components of which are the initial compounds. The polythermal section of the  $\text{NiAl}_3$ - $\text{VAl}_3$  cross section has three fields of primary crystallizations:  $\text{L} + \text{Ni}_2\text{Al}_3$ ,  $\text{L} + \text{VAl}_3$ , and  $\text{L} + \text{V}_5\text{Al}_8$ . Fusion of the  $\text{NiAl}_3$  compound in the entire concentration interval is incongruent in nature. The combined crystallization of the phases  $\text{Ni}_2\text{Al}_3$  and  $\text{V}_5\text{Al}_8$  in the 20-80 at.%  $\text{V}_5\text{Al}_8$  interval occurs according to the eutectic type. The peritectic nature of the formation of the compounds  $\text{Ni}_2\text{Al}_3$  and  $\text{V}_5\text{Al}_8$  results in the presence of two three-phase areas on the polythermal section. The mutual replacement of nickel and vanadium atoms has little

1/2

USSR

MYASNIKOVA, K. P., et al., Izvestiya Akademii Nauk SSSR, Metally,  
No 1, Jan 71, pp 186-189

influence on increasing the hardness of alloys, due to the similarity of their atomic radii. The absolute value of hardness of alloys in the  $\text{Ni}_2\text{Al}_3\text{-V}_5\text{Al}_8$  cross section is 2.5 times greater than the hardness of alloys in the  $\text{NiAl}_3\text{-VAl}_3$  cross section.

2/2

- 22 -



1/2 021  
TITLE--REMOVAL OF ZINC FROM NICKEL BRASSES -U-  
AUTHOR--(03)-MARSHAKOV, I.K., KARAVAYEVA, A.A., SARYAN, S.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZASHCH. METAL. 1970, 6(2), 241-3  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--BRASS, NICKEL CONTAINING ALLOY, ZINC CONTAINING ALLOY,  
CORROSION RATE, ELECTROCHEMISTRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1898  
STEP NO--UR/0365/70/005/002/0241/0243  
SESSION NO--AP0118860  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 021

CIRC ACCESSION NO--AP0118860

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. IN STUDIES OF CU-NI BRASSES, THE CORROSION RATE IN 0.5N HCL AND IN 0.1N HCL PLUS 0.01N CUCL SUB2 WAS MEASURED BY LOSS OF WT. AND THE AMT. OF THE COMPONENTS WHICH ENTERED THE SOLN. THE KINETICS OF THE ELECTROCHEM. REACTIONS WERE STUDIED UNDER STATIC CONDITIONS AND ON ROTATING ELECTRODES BY GALVANOMETRIC METHODS. THERE IS A CONC. POLARIZATION DURING ANODE DISSOLN. OF THE ALPHA AND BETA PHASES OF BRASS. INTRODUCTION OF NI PARTIALLY STOPS THE ANODE DISSOLN. AND RAISES THE CORROSION POTENTIAL. THIS UPSURGE OF POTENTIAL DECREASES THE ZN REMOVAL OF BRASS. FACILITY: VORONEZH. GOS.

UNIV., VORONEZH, USSR.

MARSHAKOV, V.N.

CHEMICAL PHYSICS

ISTOMIR, O.I.; KOLESHNIKOV-SVINAROV, V.I.; MARSHAKOV, V.N.

Unsteady rate of powder burning. Dokl. AN SSSR 154 no.4:  
907-909 1962. (NIRA 1711)

1. Institut khimicheskoy fiziki AN SSSR, Predstavleno akademikom Ia. B. Zel'dovichem.

Heat Treatment

USSR

M UDC 669.018.24:621.789.3:620.183

KIDIN, I. N., LIPCHIN, T. N., and MARSHALKIN, A. N., Moscow Institute of Steel and Alloys

"Annealing of ShKh15 Steel by the Method of Cyclic Electrothermal Treatment"

Moscow, IVUZ Chernaya Metallurgiya, No 4, 1970, pp 151-154

Translation: Before mechanical treatment and hardening, ball-bearing steels are subjected to prolonged annealing into divorced pearlite. A cyclic electrothermal treatment method of annealing is presented which reduces treatment time and enhances the possibilities of automation. It involves multiple quick heating into the austenitic region with intermediate decomposition in the pearlite region. After five cycles a structure of grained carbide with desired hardness is obtained in ShKh15 steel. The dependence of the time of the incubation period and the time of conclusion of transformation on the temperature of austenization and isothermal holding at various rates of heating (deg/sec) is shown.

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1/2 013  
UNCLASSIFIED  
TITLE—SINGLE PARTICLE STATES OF A FISSIONABLE NUCLEUS -U-  
AUTHOR—MARSHALKIN, V.YE.  
COUNTRY OF INFO—USSR  
SOURCE—IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(4), 52-5  
DATE PUBLISHED—70  
SUBJECT AREAS—PHYSICS  
TOPIC TAGS—NUCLEAR ENERGY LEVEL, NUCLEAR FISSION, NUCLEAR STRUCTURE,  
ASYMPTOTIC METHOD, SPIN ORBIT COUPLING  
CONTROL MARKING—NO RESTRICTIONS  
DOCUMENT CLASS—UNCLASSIFIED  
PROXY REEL/FRAE—3005/1648  
CIRC ACCESSION NO—AT0133553  
STEP NO—UR/0139/70/013/004/0052/0055  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--ZONOV70

2/2 013  
CIRC ACCESSION NO--AT0133553  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY USING THE METHOD OF QUASI  
CLASSICAL APPROXN., EQUATIONS FOR ENERGY LEVELS FOR SINGLE PARTICLE  
STATES WERE DERIVED FOR ALL GEOMETRICAL FORMS OF FISSIONABLE NUCLEUS  
WHICH CAN BE OF PRACTICAL IMPORTANCE. PARABOLIC POTENTIAL, SPINORBITAL  
INTERACTIONS, AND INTERPOLATION TERM IN THE ASYMPTOTIC APPROXN. OF  
NILSSON (1955) WERE TAKEN INTO ACCOUNT.  
POLITEKH. INST., TOMSK, USSR.

UNCLASSIFIED

UDC 51

USSR

MARSHEV, V. I., PONOMARENKO, L. A.

"Classification of Models of the Economy"

V sb. Prom. kibernetika (Industrial Cybernetics — collection of works), Kiev, 1971, pp 30-39 (from RZh-Kibernetika, No 9, Sep 73, Abstract No 9V508)

No abstract

1/1

UDC 621.355.2(088.8)

USSR

ASEYNBERG, E. Ye., CHERNYSHEV, I. I., KRYUCHKOV, A. V., BUTS, D. I.,  
MARSHEVA, Z. V.

"A Lead Battery"

USSR Author's Certificate No 300913, Filed 21/08/69, Published 27/05/71,  
(Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No  
2 L213 P by the author's).

Translation: In order to increase the specific electrical characteristics  
and simplify the technology of manufacture of a lead battery, its body is  
made as individual vessels connected by barriers, each of which is made as  
a one-piece unit with the walls of the two neighboring vessels.

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MARSHIN, I. N.

MEDICAL  
SERVICE

J-0505

501. BILLYBY Medical  
JUN 1972

117  
IDN 616-0001-17-03-614-223

YOUNG  
DECEMBER

Lieutenant-Colonel of the Medical Service, John Marshall, Surgical  
treatment of a deep burn caused by electric current.

Patient 5, aged 22, was taken by an electric current of  
more than 1000 volts when he placed his right hand directly on the wire.  
During the brief period in which the current passed from his hand to  
his feet, he did not lose consciousness. A faintness developed and  
away from the wire, by pulling at his clothing.

On arrival at the surgical department of the hospital, the  
patient complained of weakness, acute pain and numbness at the entrance  
of the right hand, as well as pain in the joints of both feet. His  
pupils were 4 mm and his pulse was normal. Blood pressure was 120/70. On the palm of his right  
hand, from the base of fingers 3 - 5 to the tendon, there was evidence  
of a burn in the form of a narrow strip where the tissue was carbonized.  
On the outer - radial side of the lower third of the forearm, there was  
a shallow crater of the skin, measuring 5 x 6 cm, covered with epidermal  
blister. The fingers showed little swelling, and the skin sensibility  
was normal. On the right side, there was a first and third degree burn  
at all the joints, while on the left side, the sector affected by a third  
degree burn measured 6 x 4 cm.

During the first two - three days, the edema of the right wrist  
and forearm increased, and there was some pain. Antihistamines were pre-  
scribed, as well as ointments, bandages, immobilization and blood trans-  
fusion. On the 10th day, there was evidence of dry gangrene of the 2nd -  
4th toes of the right foot, as well as necrosis of the skin and subcutaneous  
tissue of the plantar surface on the left foot, over a sector measuring  
15 x 7 cm. There was strong edema in the right wrist and no active move-  
ment of the fingers, or of the radiocarpal joint. Sensibility of the skin  
could be found only in the small fingers. There was rejection of necrotic  
tissue in the area of the radiocarpal joint, in the form of a bracket.

On the 10th day, a collection of physicians decided to amputate  
the lower third of the right forearm, because of the formation on its  
volar-radial surface - from the radiocarpal joint upward - of a soft  
tissue deposit 8 cm long, deep enough to reach the square pronator.  
Painful tension of the tendon, pressure and radial artery had formed  
over this entire stretch. On the front side of the joint, the darkest head  
of the rotator creased, while the tendon of the extensors of the fingers  
were completely fused, revealing intact was only a strip of skin some 1 cm.  
wide, complete with its underlying tissue, which covered the head of the  
ulna bone.

The patient refused to undergo an amputation. The swollen wrist  
was left again to the other side. It was cold, immobile and retained  
denervation only in the little finger. Rejection of necrotic tissue con-  
tinued slowly, and the growth of granulations appeared only by the end of  
the second month. On the 10th day the tendons of both the deep and the  
surface extensors of the 2nd to 5th fingers were present, through the  
open and painful surgical canal in the wrist. A skin flap, 0.3 cm. thick,  
was taken from the left hip and used to cover the granulating surface of the  
lower third of the right forearm, over two thirds of its length. At the same  
time, the granulating wounds on the plantar surface were closed - on the  
left foot over an area of 16 x 7 cm., and on the right - covering the wound  
and the stump of toes I to IV.

1/2 017 UNCLASSIFIED  
TITLE--SEARCH FOR THE DIRAC MONOPOLE AT THE 70 GEV I.P.H.E. PROTON  
SYNCHROTRON -U-  
AUTHOR--(05)-GUREVICH, I.I., KHAKIMOV, S.KH., MARTEMIANOV, V.P., MISHAKOVA,  
A.P., OGURTZOV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--PHYS. LETTERS (NETHERLANDS) VOL. 318, NO. 6, P. 394-6 (16 MARCH  
1970)  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PROTON ACCELERATOR, SYNCHROTRON, MAGNETIC POLE, PARTICLE CROSS  
SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/0532

STEP NO--NE/0000/70/003/006/C394/0376

CIRC ACCESSION NO--AP0111725

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0111725

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DESCRIBES A SEARCH FOR THE DIRAC MONOPOLE AT THE 70 GEV I.P.H.E. PROTON SYNCHROTRON. IT WAS FOUND THAT THE UPPER LIMIT OF THE MONOPOLE PRODUCTION CROSS SECTION WAS SIGMA (90PRIME0 SUB0) SMALLER THAN OR EQUAL TO 1.5 TIMES 10 PRIME NEGATIVE 41 CM PRIME2 FOR M SUB0 SMALLER THAN OR EQUAL TO 5 M. FACILITY: I. V. KURCHATOV INST. ATOMIC ENERGY, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: **AP0049042**

Ref. Code: **UR 037**

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr /  
PP 17-19

**SIGNIFICANCE OF DRINKING CAMPIMETRIC TEST OF A. M. VODOVOZOV  
IN THE DIAGNOSIS OF GLAUCOMA**

Yu. F. Martemyanov

**Summary**

A drinking clinostatic test was proposed by A. M. Vodovozov back in 1968. The author set a task to check on the efficiency of the test and also to define more exactly the procedure of recording the increase in the size of the blind spot. Investigation demonstrated the test to be highly specific for glaucoma. Thus, an increase by 4 to 23 cm in the vertical dimension of the blind spot was registered in 100 eyes of 60 glaucomatous patients, an average increase comprising 12 cm ( $M=12$  cm,  $\delta=\pm 3.91$ ,  $m=0.4$ ). In healthy subjects (120 eyes) the increase in the vertical dimension of the blind spot did not exceed 3.5 cm, being within the error of the method. The test satisfies demands to be met by diagnostic tests, viz. it is sufficiently sensitive, harmless, simple and can be applied in outpatients departments. The author recommends its use for an early diagnosis of glaucoma.

**41**

REEL/FRA  
**19800827**

**2**

USSR

MARTEN'YANOV, YU. S.

UDC 51:801

"Text Description (Language of Valence-Junctive-Emphasal Relations)"

V sb. Mash. per. i prikl. lingvist. (Machine Translation and Applied Linguistics collection of works), vyp. 14, Moscow, 1971, pp 43-70 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V660)

Translation: This is the conclusion of a paper (the first part was published in the collection Mashinnyy perevod i prikladnaya lingvistika [Machine Translation and Applied Linguistics], No 13) containing a description of the system of relations which are embodied in text. The result is a language designed to describe the "deep" structure of the text (an analogy with the tree language, and so on is possible). The basic concept is the valence group. This concept approximately corresponds to the concept of the component. In the elements of the valence group, two types of hierarchical relations are defined. First, inside the group the valence (always one) and the additions to it are isolated. The valence is a word from the valence group which requires complements just as the preposition requires a noun in a defined case, the adjective, the noun which it defines, the verb, complements, and so on. In the valence groups "the books of Tolstoy," "snowy peaks," "beautiful lawn," "beauty of the lawn," the words Tolstoy, snowy, beauty and beautiful appear as the valence, and "books," "peaks" and "lawn" will be the complements. The difference in the

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USSR

MARTEM'YAKOV, YU. S., Mash. per. i prikl. lingvist., vyp. 14, Moscow, 1971, pp 43-70

expressions "beauty of the lawn" and "beautiful lawn" is transmitted by means of introducing another hierarchy which does not depend on the "valence-complement" relations. In the first expression the junctive apex is "beauty" and in the second, "lawn." In addition, in the system provision is made for the possibility of the logical separation -- emphase -- of an element of the valence group. The different structures will be assigned to sentences: "they loved the beautiful lawn" (namely, lawn and not something else) and the "beautiful lawn they loved."

2/2

- 82 -

Nitrogen Compounds

USSR

UDC 547.821+547.732+547.722

PONOMAREV, A. A., (DECEASED), and MARTEM'YANOVA, N. I., Saratov State University imeni N. G. Chernyshevskiy, Saratov

"Aminoesters of Heterocyclic Dicarboxylic Acids"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 4, Apr 71, pp 515-518

Abstract: By condensing the dichlorides of 2,5-furan and 2,5-tetrahydrothiophenedicarboxylic acids with 1-methyl-, 1-ethyl-, or 1-butyl-3-hydroxypiperidine, the corresponding amino esters were obtained in the form of their hydrochlorides. These were converted into the bases and the latter into diiodomethylates. The formulas and properties of 13 compounds that were prepared are listed in a table. These compounds are of interest from the standpoint of the physiological activity which they may exhibit. Many aminoesters of alicyclic carboxylic acids have antispasmodic, antihistaminic, and curariform activity, while some of them lower the blood pressure.

melt containing KCl and  $K_2MOCl_6$ . The electrolysis was carried out under an atmosphere of argon. The precipitate was studied metallagraphically and by x-ray analysis. The thickness was determined from the increase in weight. The radial texture by the ARKHAROV method. The feasibility was demonstrated for preparing deposits of high purity Mo having a thickness of a new mm from strictly chloride melts. For this, it is necessary to use high purity salts as a starting material and high purity inert gas to separate the anolyte from the catholyte. A number of materials, such as graphite, W, Pt, Sr, Pd, Au, Ha, Fe, Ni, and Ag, may be used for the cathode and strongly cohesive

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USSR

UDC 621.357.13.669.28

BARABOSHKIN, A. N., SALTYSKOVA, N. A., TALANOVA, M. I., and MALTEM'YANOVA, Z. S.

"The Structure of Continuous Deposits of Molybdenum Obtained from the Electrolysis of the Melt  $KCl-K_2MoCl_6$ "

Tr. In-ta elektrokhemii. Ural'sk. nauch. tsentr AN SSR (Works of the Institute of Electrochemistry. Ural Scientific Center, Academy of Sciences USSR), Vyp 18, 1972, pp 87-93 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L344 by B. B. Grinina)

Abstract: A study was made of the influence of the electrolysis parameters on the structure of the continuous deposition of Mo prepared from a

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BARABOSHKIN, A. N., et al., Tr. In-ta elektrokhimii. Ural'sk. nauch. tsentr AN SSR, Vyp 18, 1972, pp 87-93

precipitates may be obtained from chloride oxide melts. The texture of the growth is type 3. It is produced by relatively high rates of growth of the grain having orientation of III perpendicular to the substrate such that it is actually related to it by a twin structure.

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USSR

UDC 621.357.7:669.268

TARASOVA, K. P., BARABOSHKIN, A. N., MARTEN'YANOVA, Z. S.

"Influence of Complex Formation on the Structure of Chromium Sediments"

Tr. In-ta Elektrokhimii. Ural'sk. Nauch. Tsentr. AN SSSR [Works of the Institute of Electrochemistry, Ural's Scientific Center, Acad. Sci. USSR], No 17, 1971, pp 118-123 (Translated from Referativnyi Zhurnal, Khimiya, No 3, 1972, Abstract No 3 L312 by V. V. Grinina).

Translation: The influence of the F ion on the structure of Cr sediments produced by electrolysis of chloride-fluoride and fluoride melts was studied. Increasing the F/Cr ratio to 10 caused a decrease in grain size in the sediment. Further increases in fluoride concentration in the electrolyte had no significant influence on crystal size. Compact sediments, well bonded to bases of Cu, Ni, Mo, Nb, alloys VN-2 and VN-3 were produced at temperatures of 700-900° and  $D = 0.01-0.1 \text{ a/cm}^2$  in melts containing 5-20 wt.% K hexafluorochromate ( $\text{K}_3\text{CrF}_6$ ). As the content of the F ion in the melt increased, the grain of the sediment was primarily oriented with the  $\langle 100 \rangle$  direction perpendicular to the plane of the substrate. The quality of the texture increased as sediment thickness increased.

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USSR

UDC 612.35.014.21:612.26).014.46:576.351.  
315.097.29

DZHAPARIDZE, M. N., MARTENS, L. A., and EGOROVA, V. D., All Union Scientific  
Research Anti-Plague Institute "Mikrob", Saratov

"The Effect of Cholera Vibrio Endotoxins on the Respiration of Hepatic Mitochondria  
in the Presence of Kreb's Cycle Substrates"

Moscow, Byulleten' Eksperimental'noy i Biologiyi Meditsiny, No 4, 1970, pp 66-69

Abstract: The effect of cholera vibrio endotoxins, isolated by Boivin's technique and filtered on Sephadex G-200, on the respiration of hepatic mitochondria of guinea pigs and white rats was studied in the presence of the Kreb's cycle substrates. The degree of respiration was determined manometrically by Warburg's apparatus and chromatographically by the depletion of substrates. A definite inhibiting effect of the vibrio endotoxins on respiration of mitochondria in the presence of malate, oxalacetate, alpha-ketoglutarate, and pyruvate was observed. The toxins did not influence the oxidation of succinate, citrate or restored NAD (nicotinamide adenine dinucleotide). From their study the authors conclude that cholera vibrio endotoxin causes a drastic inhibition of the NAD-dependent dehydrogenases of the Kreb's cycle.

USSR

UDC 616.932-08-092

DZHAPARIDZE, M. N., MARTENS, L. A., YEGOROVA, V. D., and OGARENKO, N. B.,  
All Union Antiplague Institute "Mikrob" (Director: prof. N. I. Nikolayev),  
Saratov

"The Problem of Pathogenetic Therapy of Intoxication Caused by Endotoxins of  
Cholera and El-Tor Vibriion"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 5,  
Sep/Oct 73, pp 75-78

Abstract: A study of respiration of mitochondria of the liver, heart, kidneys  
and small intestine of laboratory animals in a Warburg apparatus in the pres-  
ence of malate, succinate and -ketoglutarate demonstrated that inhibition  
caused by endotoxin of cholera (strains No 596B Inaba and No 149 Ogava) or El-  
Tor vibriion (strains T-4 Inaba and No 573 Ogava) was eliminated only by an  
elevation of the concentration of malate. At the height of the disease mito-  
chondria of animals affected with endotoxin oxidized malate much less than  
the intact animals. Administration of malate to C57Bl mice infected with  
endotoxins was accompanied by an increase in the intermediates of the Krebs'  
cycle in tissues, producing a therapeutic effect. It has been concluded that  
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DZHAPARIDZE, M. N., et al., Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 5, Sep/Oct 73, pp 75-78

malate should be included in the composition of the fluid used for rehydration of the patients suffering from cholera, particularly when the administration was to be oral or through a stomach tube.

2/2

Immunology

USSR

UDC 576.851.45.097.2

VEYNBLAT, V. I. and MARIENS, L. A., "Microb" Antiplague Institute

"Characteristics of the Structures Responsible for the Immunochemical Specificity of the "Main" Somatic Antigen of Pasteurella pestis and Its Capacity to Suppress Mitochondrial Respiration"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1973, pp 130-134

Abstract: Study of two structures forming part of the "main" somatic antigen of Pasteurella pestis, EV strain, isolated in a highly purified form by a special method. One determines the specificity of the polysaccharide of the antigen, while the other is responsible for virtually all the activity of the original preparation that inhibits mitochondrial respiration. A trichloroacetic acid extract of the microbe grown at 28°C yielded a purified specific polysaccharide-polypeptide complex with a molecular weight of 72,400±2000 and the hydrodynamic parameter of the molecule of 27.5 Å. A complex, which possessed amphoteric properties, contained galactose, glucose, arabinose, xylose, hexosamine, cystine, aspartic acid, serine, glycine, and alanine. The capacity of the "main" somatic antigen to inhibit mitochondrial respiration was derived from two fragments of the trichloroacetic acid complex. These fragments were thermostable, had a relatively low molecular weight, and consisted of protein and nucleic acids.

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1/2 020 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--THE INFLUENCE OF CHOLERA VIBRION ENDOTOXINS ON THE RESPIRATION OF  
HEPATIC MITOCHONDRIA IN THE PRESENCE OF KREBS'S CYCLE SUBSTRATS -U-  
AUTHOR--DZHAPARIDZE, M.N., MARTENS, L.A., YEGOROVA, V.D.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL' NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR  
4, PP 66-69  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHOLERA, BACTERIAL ENDOTOXIN, WHITE RAT, DEHYDROGENASE, GUINEA  
PIG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1990/1743

STEP NO--UR/0219/70/059/004/0066/0069

CIRC ACCESSION NO--AP0109704

ZZZZZZZZZZ UNCLASSIFIED



2/2 : 020

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109704

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE IS CONCERNED WITH THE STUDY OF CHOLERA VIBRION ENDOTOXINS, ISOLATED BY MEANS OF BUAKEN'S TECHNIQUE OR FILTRATION ON SEPHADEX G-200, ON THE RESPIRATION OF HEPATIC MITOCHONDRIA OF GUINEA PIGS AND ALBINO RATS IN THE PRESENCE OF KREBS CYCLE SUBSTRATES. THE RESPIRATION INTENSITY WAS ASSESSED MANOMETRICALLY IN WARBURG'S APPARATUS AND CHROMATOGRAPHICALLY BY THE DEPLETION OF SUBSTRATES. THE AUTHORS ESTABLISHED AN INHIBITING EFFECT OF VIBRION ENDOTOXINS ON THE RESPIRATION OF MITOCHONDRIA IN THE PRESENCE OF MALATE, OXALACETATE, ALPHAKETOGLUTARATE AND PYRUVATE. THE TOXINS DID NOT INFLUENCE THE OXIDATION OF SUCCINATE, CITRATE AND RESTORED NAD. A CONCLUSION IS MADE ON INJURY OF NAD DEPENDENT DEHYDROGENASES OF KREBS' CYCLE.

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UNCLASSIFIED

USSR

UDC 613.693

GURVICH, G. I., Col Med Serv and Professor, and MARTENS, V. K., Captain Med Serv.

"Hyperventilation in Pilots During Flight"

Moscow, Voenno-Meditsinskiy Zhurnal, No 5, 1973, pp 64-66

Abstract: Pulmonary function tests performed on pilots during flights revealed a tremendous rise in respiratory effort yielding an average pulmonary ventilation of 17 L/min and an average respiratory rate of 20 breaths/min. In critical moments, pulmonary ventilation may reach 32 L/min (400% of the resting value) and respiratory rate 35 min. Alveolar CO<sub>2</sub> conc. falls to about 3.5% on the average and to below 3% in critical moments. On repeat flights with pulmonary function tests, the flight personnel are able to maintain alveolar CO<sub>2</sub> concentration at about 5%. Since the hypocapnia developing in flight may reach dangerous levels, it is urgently recommended to take appropriate measures, including testing the pilots for susceptibility to hypocapnia, applying methods for adaptation to hypocapnia, training pilots in how to suppress hyperventilation, and instructing flight and ground personnel in how to recognize disorders caused by hypocapnia and distinguish them from those caused by hypoxia. Inhalation of a gas mixture with an appropriately increased CO<sub>2</sub> conc. is recommended as the most reliable method of treating hypocapnia.

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USSR

UDC 551.46

MARTI, Yu. Yu., Professor, Institute of Oceanology, Academy of Sciences USSR

"Planet - Ocean - Fish"

Moscow, Priroda, No 2, 1970, pp 30-36

Abstract: A classification of fishes is proposed based on the three main aquatic biotopes -- coastal waters, waters forming part of major currents, and waters of the open ocean. The three main forms of existence of fishes - settled, migratory, and drifting ways of life - correspond to the respective biotopes. The settled fishes consist of thousands of species but make up only about 35% of the world fish catch. The migratory fishes count only several hundred species, constitute about 65-70% of the world fish catch, and occupy about 20-25% of the ocean's expense. There are just a few dozen species of drifting, plankton-eating species. A table summarizes the morphological features, reproductive characteristics, population dynamics, etc. of each biogeocenotic complex.

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1/2 020  
UNCLASSIFIED  
PROCESSING DATE--30OCT70  
TITLE--MODES OF INTERACTION BETWEEN COMPETITIVE INHIBITORS AND THE ALPHA  
CHYMOTRYPSIN ACTIVE CENTER -U-  
AUTHOR-(03)-BEREZIN, I.V., LEVASHOV, A.V., MARTINEK, K.  
COUNTRY OF INFO--USSR  
SOURCE--FEBS (FED. EUR. BIOCHEM. SOC.) LETT. 1970, 7(1), 20-2, ENG.  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--TRYPSIN, INHIBITION, SPECTROPHOTOMETRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0930  
STEP NO--NE/0000/70/001/001/0020/0022  
CIRC ACCESSION NO--AP0126589  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126589

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE FORMATION OF VARIOUS COMPLEXES WITH ALPHA CHYMOTRYPSIN (1) WAS STUDIED BY MEASURING THE COMPETITION BETWEEN INHIBITORS AND PROFLAVINE FOR A BINDING SITE ON THE ENZYME. THE EQUIL. STATE IN THE SYSTEM I DYE COMPETITIVE INHIBITOR WAS DETD. SPECTROPHOTOMETRICALLY. IT WAS CONCLUDED THAT, IN ENZYME INHIBITOR COMPLEX FORMATION, THE POLAR GROUPS OF THE ACTIVE CENTER ARE NOT TRANSFERRED INTO A NONPOLAR ENVIRONMENT. FACILITY: LAB. BIOORG. CHEM., M. V. LOMONOSOV STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ON THE MODES OF INTERACTION BETWEEN COMPETITIVE INHIBITORS AND THE  
ALPHA CHYMOTRYPSIN ACTIVE CENTRE -U-  
AUTHOR-(03)-MARTINEK, K., LEVASHOV, A.V., BEREZIN, I.V.  
COUNTRY OF INFO--USSR  
SOURCE--MOLEKULYARNAYS BIOLOGIYA, 1970, VOL 4, NR 3, PP 339-347  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ENZYME, INHIBITION, THERMODYNAMICS, TRYPSIN, BENZENE  
DERIVATIVE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/0154 STEP NO--UR/0463/70/004/003/0339/0347  
CIRC ACCESSION NO--AP0120854  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120854

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO STUDY THE MECHANISM OF THE INHIBITOR ENZYME COMPLEX FORMATION A COMPARISON IS MADE OF THE THERMODYNAMICS OF THIS PROCESS ( $\Delta F_{SUBI}$ ) WITH THE FREE ENERGY OF THE MODEL PROCESS OF THE INHIBITOR EXTRACTION ( $\Delta F_{SUBEXTR}$ ) FROM WATER L OCTANOL. THE VALUES OF ASSOCIATION CONSTANTS OF COMPETITIVE INHIBITORS (BENZENE DERIVATIVES) WITH ALPHA CHYMOTRYPSIN WERE MEASURED SPECTROPHOTOMETRICALLY BY MEANS OF THE ANALYSIS OF COMPETITIVE REVERSIBLE BINDING OF INHIBITORS AND PROFLAVIN DYE WITH THE ACTIVE CENTRE. THE CORRELATION BETWEEN THE FREE ENERGY VALUES  $\Delta F_{SUBI}$  AND  $\Delta F_{SUBEXTR}$  INDICATE THE PREDOMINANT ROLE OF THE HYDROPHOBIC INTERACTION IN THE BINDING OF THE STUDIED INHIBITORS AND THE ENZYME. ON THE OTHER HAND, THE THERMODYNAMICS ANALYSIS SHOWED THAT IN THE COURSE OF FORMATION OF THE ENZYME INHIBITOR COMPLEX POLAR (UNCHARGED) SUBSTITUENTS IN THE BENZENE MOLECULE ARE NOT TRANSFERRED TO THE APOLAR MEDIUM OF THE ACTIVE CENTRE. FACILITY: LABORATORY OF BIOORGANIC CHEMISTRY, STATE UNIVERSITY, USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 612.843.36.014.48

POPOV, G. V., and MARTINENKO, M. G., Scientific Research Laboratory of Physiology, Cherkassy Pedagogical Institute

"Dark Adaptation during Gravitational Loads in Athletes"

Kiev, Fiziologicheskii Zhurnal, Vol 16, No 5, Sep/Oct 70, pp 655-660

Abstract: The dynamics of dark adaptation of the visual analyzer during passive changes in body position was studied in athletes with various qualifications and specializations. The adaptation time was determined in the initial state, immediately after a shift in body position on a rotatory stand, and 2 min after this shift. The initial value of the adaptation time was less for highly qualified athletes than for nonathletes. Initial adaptation took place most rapidly for gymnasts, acrobats, and wrestlers. Changes in the position of the body from horizontal to vertical or vice versa were accompanied by phase shifts in the time of dark adaptation. Adaptation was initially impaired, followed by more or less complete normalization. The rate and degree of restoration were directly related to the extent of physical training and to the adaptation of the subjects to shifts in body position. It is assumed that disturbances in the blood supply to the brain and retina as well as general reactions of the stress type, were affecting the shifts in dark adaptation under experimental conditions.

1/1



BIOLOGY

Bionics

USSR

UDC 577.15+577.3.C01.57+557.3:535.2/.3.04

BEREZIN, I. V., VARFOLOMEYEV, S. D., and MARTINEK, K. Moscow State University  
imeni M. V. Lomonosov

"Cis-Trans-Isomerization of Cinnamoyl- $\alpha$ -Chymotrypsin Under the Effect of Light,  
and Modeling of Molecular Mechanisms of Optical Reception"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 4, Aug 70, pp 932-935

Abstract: Only recently has the experimental basis for representing the mechanism of the primary act of photoreception been established. Modeling of this process is of extreme importance, because it is easier to study and comprehend the overall physical and chemical aspects of the molecular mechanisms of light in biological systems. In addition modeling the photoreception mechanism, as an element of chemical bionics, may lead to the creation of artificial, light-sensitive systems operating according to the principle of the visual organs of animals. The absorption of light quanta in the photoreceptor cells of the retina affects many light-sensitive pigments. All the pigments contain as a chromophoric group an 11-cis-retinal group, bonded in the form of a Schiff's base to the NH<sub>2</sub>-group of specific albumins. The first stage of the mechanism of vision includes the following processes: 1) trans-photostereoisomerization of the 11-cis-retinal

1/2

USSR

BEREZIN, I. V., et al, Doklady Akademii Nauk SSSR, Vol 193, No 4, Aug 70, pp 932-935

group, 2) the dark process, which is a chain of conformational changes of apoprotein, with the last reaction a hydrolysis step leading to the formation of free all-transretinal and opsin; 3) the further course of the transformation process of light consists of signal amplification, (which may be enzymatic). These processes were studied with certain chymotrypsin derivatives proposed as models. Deacylation of cis-cinnamoyl- $\alpha$ -chymotrypsin, synthesized by the authors, does not take place even at the optimum pH for the catalytic action of chymotrypsin. Rather, the compound has to be converted into the trans-isomer by irradiation with UV light, which is rapidly deacylated into trans-cinnamic acid and the free enzyme. The enzymatic photo-initiation process leads to an amplification of the primary light signal as a result of the accumulation of reaction products.

2/2

USSR

UDC: 512.25/.26+519.3:330.115

MARTINES-SOLER, F.

"On the Problem of the Theory of Duality in Linear Programming"

V sb. Modelir. ekon. protsessov (Modeling of Economic Processes--collection of works), Moscow, Moscow University, 1971, pp 297-313 (from RZh-Matematika, No 11, Nov 71, Abstract No 1V674)

Translation: An attempt is made to apply the theory of duality in linear programming for explicit use in proving theorems of the principle of duality for convex cones. In this connection the structure of proofs of the theorems appears unique: a set is isolated whose extremum properties must be studied; from this set, a pair of cones which are dual with respect to one another is constructed; on the basis of the principle of duality and the specific structure of the isolated cones, relative to the initial set, the author establishes the required properties. This principle is outlined in §1, and in §2 a study is made of the class of polyhedral convex cones for which the principle of duality can be effectively used. This principle is illustrated by an example of systems of linear

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USSR

MARTINES-SOLER, F., Modelir. ekon. protsessov, Moscow, Moscow University, 1971, pp 297-313

equations given in §3. The theory of duality itself in linear programming is expounded in §§4 and 5. Author's introduction.

2/2

USSR

UDC: 512.25/.26+519.3:330.115

MARTINES SOLER F.

"On the Problem of the Theory of Duality in Linear Programming"

V sb. Modelir. ekon. protsessov (Modeling of Economic Processes--collection of works), Moscow, Moscow University, 1971, pp 297-317 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V674)

Translation: An attempt is made to outline the theory of duality in linear programming with explicit use of theorems of the principle of duality for convex cones in the proof. In this connection, the structure of the proofs has a uniform appearance: a set is isolated whose extremum properties require study; a pair of mutually dual cones are constructed from this set; the author establishes the required properties on the basis of the principle of duality and the specific structure of the isolated cones relative to the initial set. The indicated principle is outlined in §1, and in §2 the author studies a class of polyhedral cones for which the principle of duality finds an effective application. This principle is illustrated in §3 by the example of systems of linear equations. The theory of duality itself in linear programming is given in §§4-5. Author's intro.  
1/1

- 27 -

USSR

VDC 576.856.853

MARTINEVSKIY, I. L., and STOGOVA, A. G., Central Asian Antiplague Institute,  
Alma-Ata

"Isolation and the Properties of Some Auxotrophic Mutants of 'Vibrio Cholerae'  
El tor"

Moscow, Genetika, Vol 9, No 1, 1973, pp 92-95

Abstract: Difficulties in identifying and describing different cholera vibrios can be overcome by studying related vibrios. Stable auxotrophic mutants were produced from Vibrio cholerae El Tor after treatment with N-methyl-N-nitro-N-nitrosoguanidine. They included 62 isoleucine-, 12 methionine-, 10 inosine-, 5 adenine-, 5 tryptophan-, 3 valine-, 2 histidine-, 3 arginine-, 2 thymidine-, 1 serine-, 2 leucine-, and 2 cysteine-dependent mutants, 4 with a triple dependence (valine, leucine, isoleucine), and 5 with undetermined dependence. Such mutants did not grow when the particular amino acid was replaced by predecessors. Methionine-, arginine-, leucine-, and thymidine-dependent auxotrophs altered their sensitivity to Mukerjee phagotypes as compared to the initial strain and were less active biochemically in solid nutrient media with respect to mannose, sucrose, maltose, and glucose. As was true for the initial strain, all auxotrophs are hemolytically inactive, agglutinate with O-I and Inaba sera,

1/2

USSR

MARTINEVSKIY, I. I. and STUGOVA, A. G., Genetika, Vol 9, No 1, 1973, pp 92-95

grow in Hottinger medium containing polymyxin (50 units/ml), and have a positive hemagglutination reaction with chick erythrocytes. With respect to biochemical activity they belong to Heiberg group 1.

2/2

USSR

UDC 576.851.315.098.346.626

MARTINEVSKIY, I. L., Middle Asian Anti plague Institute, Alma-Ata

"Repression of Isoleucine Biosynthesis by an End Product in El Tor Cholera Vibrio"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, pp 121-124

Abstract: The study was performed on El Tor cholera vibrio strain No 3170 (Inabe type) and 56 of its mutants (52 isoleucine, 2 valine, and 2 leucine auxotrophs) with identical morphological, biochemical, and antigenic properties. The samples were grown in Lederberg's minimum liquid medium with an excess of one or more of the following amino acids: isoleucine, valine, leucine, and pantothenic acid. Complete inhibition of growth and of isoleucine synthesis in strain No 3170 occurred in media with excess leucine and valine. This bivalent inhibition differentiates cholera vibrio from other bacterial species which have a multivalent inhibition. Depending on the end products inhibiting growth of the mutants, the latter can be classified into nine groups. These differences are indicative of a complex mechanism regulating biosynthesis of isoleucine, valine, and leucine in El Tor cholera vibrio.

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1/2 028 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--CURRENT CONDUCTING DISCHARGE CHANNEL NEAR THE SURFACE OF ELECTRODES  
STUDIED WITH AN ELECTRON OPTICAL CONVERTER -U-  
AUTHOR--(02)-MARTINKOV, YE.G., LIVSHITS, M.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(1), 131-2

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRODE PROPERTY, SPECTRAL LINE, IMAGE CONVERTER, BATTERY  
ELECTRODE, CURRENT DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0433

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2/2 028

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116099

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EMISSION OF THE SPECTRAL LINES WITH HIGH ENERGY OF EXCITATION OF A CURRENT CONDUCTING DISCHARGE CHANNEL WAS STUDIED AT 40,000 DEGREES K. THE DISCHARGE OF A CAPACITOR BATTERY WITH CAPACITANCE SMALLER THAN OR EQUAL TO  $\mu\text{F}$  AND WITH 5 KV WAS FOLLOWED. THE MAX. INDUCTION OF THE DISCHARGE CONTOUR WAS 20  $\mu\text{H}$ . THE TIME SPACE DISTRIBUTION OF THE SPECTRAL LINES AL III ( $\lambda$  EQUALS 4529, 4512, AND 4480 ANGSTROM) WAS MEASURED NEAR THE CATHODE SURFACE. IN THE STARTING STATE (MAX. CURRENT 12,000 A), SEVERAL CHANNELS WERE OBSD. NO PULSATION NEAR THE SURFACE OF THE ANODE WAS SHOWN. NO PULSATION SHORTER THAN 10 PRIME NEGATIVE 7 SEC WAS OBSD. NEAR THE SURFACE OF THE CATHODE, THOUGH THE EXPTS, SHOWED THE PRESENCE OF SEVERAL CHANNELS WITH PULSATION TIMES OF SOME  $\mu\text{SEC}$ . THIS EFFECT WAS ATTRIBUTED TO THE MIGRATION OF THE CHANNELS NEAR THE CATHODE. AT THE MAX. CURRENT DISCHARGE, THE EMISSION OCCUPIED THE TOTAL SURFACE OF THE ELECTRODE, AND SEP. CHANNELS WERE OBSD. IN THE FINAL STATE OF THE DISCHARGE, 2 CHANNELS WERE OBSD., THE EMISSION INTENSITY OF WHICH PULSATED AT 10 PRIME NEGATIVE 7 AND 10 PRIME NEGATIVE 6. SEC.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--KINETICS AND MECHANISM OF MANNICH BASE DISSOCIATION IN AQUEOUS  
BUFFERS -U-  
AUTHOR-(04)-BELIKOV, V.M., BELOKON, YU.N., DOLGAYA, M.M., MARTINKOVA, N.S.  
COUNTRY OF INFO--USSR  
SOURCE--TETRAHEDRON 1970, 26(5), 1199-216  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL REACTION KINETICS, CHEMICAL REACTION MECHANISM,  
CHEMICAL DECOMPOSITION, AMINE, ORGANIC NITRO COMPOUND, PROPANE, BUTANE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
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